

Professor Eugen Aburel, an original Romanian Contributor to modern Obstetrics and Gynecology

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Abstract. Professor Eugen Aburel (1899-1975) graduated from the Faculty of Medicine of the University of Iasi (Romania), later specialising in Paris in both physiology and obstetrics-gynecology with outstanding representatives of the French medical school. He worked for about thirty years in Iasi (1917-1946) before moving to Bucharest in 1947, where he continued his brilliant career until the eve of his death. On the one hand, Aburel's scientific papers developed the study of the anatomy and physiology of the female genital system, insisting on pregnant women peculiarities and integrating psychological aspects, too. On the other hand, efficiently applying basic biological sciences, his main original contributions to obstetrics and gynecology included: 1. introduction of neuraxial labor analgesia (1931) or continuous caudal anesthesia for controlling labor pains; 2. termination of pregnancy or (therapeutic) abortion induced by intra-amniotic injections of excitomotor substances, such as hypertonic saline (Aburel method, 1939); 3. Aburel pyramidalopexy procedure for treating uterine prolapse; 4. Aburel extended subfundal trachelectomy for cervical cancer (1957), enabling fertility-sparing management after surgery; 5. sagittal myometrectomy for uterine fibromatosis (Aburel technique); 6. Pfannenstiel-Aburel suprabubic transverse abdominal laparotomy. His methods aimed at being physiological, conservative and, whenever necessary, reconstructive. Surgical procedures set up by Professor Aburel continue to be cited in numerous specialty syntheses which bear on similar medical problems. At the same time Aburel endeavoured to understand and better approach female genital infections such as tuberculosis, and trichomoniasis as well. Even though he retired in 1969, until 1975 he remained incessantly involved in his work as a consulting professor emeritus of the Institute of Medicine and Pharmacy of Bucharest. He was also an active member of national and international scientific societies and presided over the Romanian Society of Obstetrics and Gynecology (1951-1961). In recognition of his merits he was awarded several important distinctions: in 1962 the Romanian Government rewarded him with the Sanitary Merit Order, 1st Class; in 1968 he became a foreign corresponding member of the French National Academy of Medicine and in 1973 he received "Les Palmes Académiques" on behalf of France. Obviously Eugen Aburel succeeded in creating a good and creative Romanian school of Obstetrics and Gynecology both in Iasi and Bucharest, which echoes until nowadays on an international level.

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Keywords: Eugen Aburel, contributions, Romanian, obstetrics, gynecology



E. Aburel

Short professional biography.

Eugen Bogdan I. Aburel was born 125 years ago, on January 23, 1899 at Galati (Covurlui County), a cosmopolitan port on the Danube, not far from the river Delta. His

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father, Ioan Aburel, came from an Armenian family settled down in Moldavia, the Eastern province of modern Romania, and was an engineer, whereas his mother, Ecaterina Costachi Aburel, descended from the old family of Veniamin Costache, an enlightened Moldavian metropolitan. (1) Eugen attended the well-known "Gheorghe Rosca-Codreanu" High School in Barlad and then the "Vasile Alecsandri" High School in Galati, he finished in October 1916, when he got his baccalaureate. Afterwards Aburel studied in a military school in Botoşani, which he finished as reserve second lieutenant. This very period covered the hard times of World War I in Romania (1916-1918) which affected particularly Moldavia and Iasi, its capital. Nevertheless in 1917 Eugen Aburel was already a student of the Faculty of Medicine of the University of Iasi, the city where he was to spend three fundamental decades (1917-1946) of his life. Six years after his admission (1917-1923), he graduated as a "doctor in medicine and surgery", with a thesis entitled *Contributions to the treatment of puerperal infections* (Iasi, 1923). His colleagues elected him president of the Medical Students' Society of Iasi (1921-1922). In January 1922, the Society of Medical Students of Iasi, celebrated 25 years of activity in the University Hall. In November, in his position of president, he proposed that a new Society of Medical Students be founded in Iasi, comprising all students, irrespective of their religion and nationality. He shared in fact Professor C.I.Parhon's more open attitude in this respect, who in January 1922 advised Medical Students' Society to accept Jewish students, too. Here is the request students addressed to the Rector of the University: "[Recorded November 9, 1922]

Mr. Rector,

We, the undersigned medical students, organised in an initiative committee, have the honour to ask you to kindly approve the convening of an assembly of medical students in order to lay the foundations of a new society of medical students able to include the entire medical student body, regardless of nationality - the current society accepting only Romanian-Christian students - and who in its extracurricular activities to

manifest itself in the most civilised way possible.

Please accept the assurance of our special respect."

Eugen Aburel signed it in first place, along with Oscar Franche, Maria Chipail and ten other colleagues, most of whom were Hebrews. (2)

While still a student he started to be interested in anatomy, physiology and surgery. After studying anatomy as an assistant to Professor Francisc Rainer, physiology under Professor Vasile Rascanu and general surgery under Professor Nicolae Hortolomei, Eugen Aburel devoted himself to obstetrics and gynecology, being the student of Professor Nicolae Zaharescu-Karaman. Intern of "St. Spiridon" Hospital in Iasi by competition (1921-1923), Aburel advanced to be a secondary surgeon (1924-1928) in the famous Professor Hortolomei's Surgery Clinic. (3,4) During that period he was successively university preparer, assistant and prosecutor at the Anatomical Institute (1916-1929) of the Faculty of Medicine and concurrently assistant professor at the Obstetrical Clinic in Iasi (1926-1936) headed by Professor Zaharescu-Karaman (1924-1934).

At the Institute of Anatomy and Laboratory of Descriptive Anatomy Eugen Aburel worked under several directors: Professor Vasile Rascanu (1925-1926), a physiologist, followed by Associate Professor Gheorghe Zamfirescu (1926-1927), a surgeon, and then under Professor Grigore T. Popa (1927-1928), a prominent anatomist. (5,6,7)

For two years (1928-1930), Dr. Aburel specialized in Paris in his favorite medical domains: obstetrics and gynecology, being a "foreign assistant" (*assistant étranger*) at the Tarnier Clinic under the direction of Professor Auguste Brindeau, and intern and assistant at Boucicaut Maternity, under the direction of Professor Victor Le Lorier. But, in Paris, he equally had the opportunity to work with Jean-Louis Faure, the celebrated surgeon, reputed gynecologist. Eventually he got equally trained in physiology, comparative anatomy and psychiatry. Indeed, he was a student of the well-known neurophysiologist Professor Louis

Lapicque, at the Sorbonne University and in the Laboratory of Applied Physiology at Henri-Rousselle Psychiatric Hospital situated in the Saint-Anne Hospital complex. He collaborated with Professor Raoul Anthony, general secretary of the French Society of Anthropology, too. He even published studies undertaken under Anthony's supervision, performed in the Comparative Anatomy Laboratory of the National Museum of Natural History in Paris, Professor Anthony directed. (8)

In Paris, Aburel also graduated from the Institute of Hydrology and Climatology. The experience he gained in physiology and psychophysiology will pay off later when he focused on the female genital system and attempted to achieve psychoprophylaxis of labor pain, i.e. *psychoprophylactic analgesia*. Back in Romania in 1932, Aburel was appointed docent in the specialty of Obstetrics and Gynecology after defending his thesis entitled "Considerations on pain in obstetrics" (9,10) In accordance with art. 74 of the Higher Education Law of 1932, he became a docent of Obstetrics and Gynecology at the Faculty of Medicine in Iași on January 15, 1932, appointed by the ministerial decision No.80.901 / 1932. (10)

The predecessor: Prof. Zaharescu Karaman (1881-1939). Until 1923, the chair of Obstetrics and Gynecology was held by Professor Vasile Bejan, belonging to the first generation of teachers of the Faculty. Later, after a short substitution (1923-1924) by Professor George Bogdan, Dr. N. Zaharescu Karaman became the head of the Department by competition in 1924 until 1934, when he returned to Bucharest. He "introduced scientific obstetrics in Iasi" (G. Nastase), trying to develop not only theoretical but equally clinical teaching of his discipline.(11) A good manager, he obtained important funds for the expansion of the clinic, established a better laboratory, substantially enlarged the library, until then absolutely insufficient, organised a suitable operating room and amplified the teaching team by integrating several assistant professors, including his future successors, Dr. Eugen Aburel and Dr. Gheorghe Placinteanu. Years later, in 1942, having become Professor, Aburel

chaired the commission who promoted Dr. Gheorghe Placinteanu as full professor of Obstetrics and Gynecology at the Faculty of Medicine of Iasi. The Commission also included Professors Alexandru Cosacescu and Vladimir Butureanu from Iasi, together with Dumitru Savulescu from Bucharest and Cristea Grigoriu from Cluj, other prominent surgeons.

Professor Nicolae Zaharescu-Karaman, Aburel's master in Iasi, studied at and graduated from the Faculty of Medicine in Bucharest, where he began to practice medicine. In 1913, he became a docent of Obstetrics and Gynecology with a thesis *on fetal peritonitis* (12) He highly appreciated the globally reputed Romanian surgeon Professor Thoma Ionescu, to whom in 1923, when he prepared to be promoted Professor in Iasi, he dedicated his *Memoir of titles and papers*, thus expressing his gratitude to him: "To Professor Thoma Ionescu, the pride of the Romanian medical corps, I, a humble worker in the field of science, pay all my homage and all my respect." (13) Hence it was not haphazardly that both Zaharescu and his pupil, Aburel, explored obstetrical anesthesia, because Ionescu himself pioneered daring methods in rachianesthesia. (14) Zaharescu-Karaman was interested in surgical issues connected to colpoperineorrhaphia and myorrhaphia of the deep transverse perineal and levator ani muscles, but also in physiological and biochemical approaches to pregnancy, topics his follower dealt with, too. (15, 16,17,18) He participated in national congresses on Obstetrics and Gynecology, too.(14,15) Zaharescu-Karaman discussed about "conscious motherhood".(19) In 1933-1934 Dr. Aburel replaced him holding courses. In 1934, Prof. Zaharescu-Karaman definitely left Iasi for Bucharest.

Professor Aburel: teacher, practitioner and manager. With Professor Zaharescu Karaman's transfer to the Faculty of Medicine in Bucharest and after a short substitution (1934-1936) by Dr. Paul Anghel, professor of Surgery, Dr. Eugen Aburel was appointed full professor and head of the Chair on December 1st, 1936. (20)

Then Aburel's professional ascent went fast, once appointed full professor of Obstetrical and Gynecological Clinic at the Faculty of Medicine of Iasi. Concurrently he worked at the "Grigore Ghica Vodă" Maternity, formerly the "Gregorian" Midwifery Institute. From 1937, the management of the Institute, where the Clinic of Obstetrics and Gynecology was located, was taken over by Professor Eugen Aburel, as director. The Maternity, hence the Obstetrics and Gynecology Clinic, belonged to the "St. Spiridon" Hospital Administration (Epitropy). After Professor Eugen Aburel's arrival at the head of the "Gregorian" Institute, the situation there began to change for the better. In 1938-1939, at the insistence of Prof. Eugen Aburel, chief physician (*medic primar*) of the "St. Spiridon" Hospital Administration, who was supported by this Administration, works were undertaken to consolidate the buildings of the old Maternity and School of Midwifery dating back to 1851, to arrange, update and endow them with modern medical equipment. One should outline that from 1938 to 1940, the main manager (*epitrop*) of the Epitropy was Professor Gr.T. Popa, a great neuroanatomist and Aburel's former teacher who, in many of his writings, defended the cause of "St.Spiridon" Hospital, of the Maternity, and of medical teaching, critically considering all the shortcomings of both the sanitary and academic systems in Iasi and Moldavia.(21) With the help of the "St. Spiridon" Hospital General Administration, an amphitheater was set up for students, the interior of the building, the laboratories and the library were modernised. The Clinical-Gynecological Service coordinated by Professor Aburel had a capacity of 20 beds. The Institute had two operating and sterilization rooms, two rooms for birth and labor, a diathermy laboratory, an analysis laboratory, an obstetrics museum, two dressing rooms, an outpatient obstetric and

gynecological consultation service, an isolation service, aseptic beds for postnatal care of mothers, beds for pregnant women, and others for patients with gynecological diseases, in addition to septicemia rooms. The setting up of the hospital wards for normal and abnormal newborns, the establishment of an obstetric radiology service and a dietetic kitchen were in their turn considered. Apart from training medical students, the Institute continued to comprise the Midwifery School, as well. On the opening of Obstetrics and Gynecology courses for medical students in the Institute's new conference hall, Prof. Eugen Aburel requested an increased number of beds for the maternity, arguing that, by then, in Romania 85% of child-wives and young mothers were not consulted by doctors, whereas 75% of pregnant women were assisted at birth by unqualified persons. In 1939, facilities of the Institute continued to improve; a modern consultation service was inaugurated, and the boarding school for student midwives expanded its capacity, the chemical analysis laboratory received innovative equipment and, for the first time at Iasi, a Hormonal Analysis Laboratory was set in place, led by secondary doctor Vasile Dobrovici, the remarkable future specialist and professor in this field. In 1939, 12,850 consultations were given at this Institute, 1,200 female patients were admitted and 600 surgical interventions were performed. The local newspapers reacted to these changes and characterised Eugen Aburel as "an artist in the art of gynecological surgery" ("Opinia", no. 9837/ January 6, 1940). (22) Thus, on the organisational level, Aburel transformed the old "Ghica-Vodă" Maternity Hospital into a model Obstetrics and Gynecology Clinic. Clinical and theoretical education in Obstetrics and Gynecology could thus fall within its rights. (22)

Original contributions

As a docent since 1932 and full professor of Obstetrics and Gynecology since

1936, Professor Aburel had a noteworthy activity in Iasi for almost 15 years, covering medical research and clinical practice, administrative projects and publication of scientific articles and handbooks. The complex research he carried out was rich, valuable and its topics complemented each other. His original work was highly appreciated both in the country and abroad. Here are his main contributions:

Basic research

1. studies on the anatomy and physiology of sensitive innervation of the female genitalia
2. investigation of the endometrium dynamics, elaborating a method for uterine sensitivity assessment
3. research on the sensitive pathways of the uterus and the mechanism of labor pain
4. *research on utero-adnexal sensitivity*
5. researches on visceral sensitivity and sensory chronaxis of the presacral nerve;
6. research on the physiology of the pelvic-genital plexus and on the reflexes starting from the genital sphere, demonstrating the existence, among others, of utero-cardio-vascular, utero-gastric, utero-vesical reflexes; research on peripheral vasomotor pathways of the limbs
7. research on psychic disturbances associated with pregnancy and the postnatal period;
8. metabolic aspects of pregnancy: lipoid nephrosis; hypercholesterolemia-cholesterinolia ratio.

II. Infectious pathology

- 1, 2. investigations on genital infections in women: trichomoniasis; tuberculosis

III. Surgical innovations

1. conductive continuous epidural analgesia and labor pain suppression
2. termination of pregnancy, including therapeutic abortion: Aburel's technique of intra-amniotic injection of hypotonic solution or tocolytic hormones

3. radical trachelectomy for early-stage cervical cancer – a fertility-sparing technique
4. reconstructive surgery: Aburel's uteropexy method - pyramidalopexy
5. sagittal myometrectomy: (Cirio)-Aburel's technique – in uterine fibromatosis
6. severe vomiting suppression in pregnancy - resection of the presacral nerve
7. Pfannenstiel-Aburel incision
8. improved surgical devices – the obstetrical balloon

Remarkably, as a surgeon, he always favored physiological, conservative and reconstructive surgery.

IV. Cancer control

1. support for an "Anticancer Institute" proposed to be founded in Iasi meant to investigate, prevent and treat cancer.

I. Basic research implemented in clinical practice

Professor Aburel's complex specialization in Paris helped him excel in both basic and applied obstetrics and gynecology. The study of basic biosciences rendered him a more efficient and innovative practitioner. Using new methods, Prof. Aburel carefully investigated the anatomy and sensitive pathways of the uterus, its dynamics in pregnancy, labor, pain, puerperium, the behaviour and structure of muscles, nerves and vessels. (23-30) He also implemented an original procedure for measuring uterine excitability in clinical practice, particularly appreciated in the country and abroad, for instance at the Montevideo International Symposium in 1960.(31)

He conducted studies of comparative anatomy and analysed congenital malformations of the ovary. (8,32). Consequently he could better understand the physiological mechanism of pain, its anatomical pathways, as well as other biological phenomena associated with pregnancy.

Knowing the existence and mechanisms of utero-cardio-vascular, utero-gastric, utero-

vesical reflexes, along with the existence of uterine interoceptors and reflexes with a starting point in the pelvic-vaginal area, he tried to counteract excessive vomiting in pregnancy. Eventually he implemented a surgical procedure: the resection of the presacral nerve. The treatment he imagined was then used and slightly modified by one of his colleagues in Iasi, Dr. Dumitru D. (Luchi) Popescu. (33), who worked as a university preparer from November

1st, 1933 in the same Clinic under both Zaharescu-Karaman's direction and Aburel's authority. Later Dr. Popescu became a university professor and well reputed obstetrician and gynecologist at the Faculty of Medicine of Timisoara, inaugurated in 1945.

Temperature variations of the body and the occurrence of hot flushes were equally examined. (34,35)



Fig. 2. Iasi. Prof. Aburel surrounded by his coworkers and the graduates of the Midwifery School

Another significant aspect he researched was linked to endocrinology, the more so as at that moment Professor Parhon had created a real school of neurology, psychiatry, psychology, endocrinology and gerontology at the Socola Hospital in Iasi. C.I.Parhon, one of the founders of endocrinology, had authored with M. Goldstein the first in the world synthesis on "The internal secretions", published in French in Paris in 1909. Due to his complex medical training, Aburel could develop both in Iasi and Bucharest a fruitful collaboration with Professor Constantin I. Parhon, bearing on topics that connected neurology, psychiatry and endocrinology to obstetrics and gynecology.

Aburel had an article included in the Jubilee volume edited in honor of Professor Parhon in 1934, dealing with the *utero-adnexal sensitivity*. (28) Parhon collaborated with his former student and wrote, for instance, about the endocrine glands during the intrauterine life in humans (1939), and the oxytocic and tocogenic function of the placenta (1966).(36) Aburel himself explored the inhibiting, oxytocic and tocogenic role of the placenta, publishing several studies in 1954, 1957 1967.(37,38,39) Some of these papers are internationally cited. (40,41)

Eventually the therapeutic action of Folcysteine in climacteric disorders and dysmenorrhea attracted Eugen Aburel, too. It is generally known that Folcysteine, by releasing

active -SH groups, modulates the oxidation-reduction balance and would efficiently control menopausal troubles. It intensifies estrogens effect upon the uterine tissue and stimulates estrogen biosynthesis. (42)

Metabolic aspects of pregnancy were necessarily investigated in their turn. Aburel noticed calcemic variations in women during pregnancy and analysed it. (43) He identified the possibility of lipoid nephrosis and discussed on hypercholesterolemia-cholesterincholia ratio in pregnancy. With his team, it was demonstrated that, in pregnant women, there is no direct relationship between hypercholesterolemia and cholesterincholia. (44Ornstein)

With Maria Franche, Professor of Infectious Pathology at the Faculty of Medicine of Iasi, he wrote on gallbladder hydrops, a possible complication in pregnancy. (45) He also studied a case of ventrolateral hernia. (46)

Against this very extensively approached physiological background attention was paid to psychic disturbances associated with pregnancy and pain. In fact among the new ways of dealing with labor pains was their psychoprophylaxy, which, in Aburel's view, represented an important point. Psychoprophylaxy relies on both pharmacological and nopharmacological means, including kinethorapy. (47,48)

II. Infectious pathology

The very first scientific paper authored by Dr. Aburel was his graduate thesis entitled "Considerations on the puerperal infections". He considered other abdominal pathologies as well, like, e.g., appendicular abcesses. (49) Later he tried to find better solutions for treating different other infections in women like, e.g., trichomoniasis. Vaccines were one of them even though they proved ineffective finally. In 2016 Camila Braz Menezes, Amanda Piccoli Frasson and Tiana Tasca mentioned that "vaccine development has been hampered by the lack of long-lasting humoral immunity associated to the absence of good animal models. Only two candidates for trichomonal vaccine have been submitted in clinical trials in the last 50 years, with no success." (50) One belonged to Prof. Aburel's team. (51) In the '30

vaccinotherapy, disputing its efficacy with bacteriotherapy and nonspecific proteinotherapy for various forms of genital infections such as metro-adnexitis.

Last but not least, the Master studied and wrote about genital tuberculosis in women. He classified, described and mentioned the therapeutic means which included surgery, as well. (52,53) In 1971 a monograph he coordinated was edited in Paris at Masson et Cie Publishing House, a landmark in medical literature. (54)

Extending his activity to genital tuberculosis, Aburel brought important contributions concerning diagnosis, medical and surgical treatment, which were equally noted by foreign specialists in the medical press abroad.

III. Surgery

1. Aburel's local continuous anesthesia for painless delivery. Undoubtedly Prof. Aburel remains most famous for his idea of diminishing "birth trauma", physically and psychologically. His continuous conductive epidural analgesia and labor pain suppression constitutes a method that is mentioned in the history of medicine and of Obstetrics above all, until today. He is credited with the first in the world childbirth without pain. He presented and published his method in Paris in 1931: *L'Anesthésie locale continue (prolongée) en obstétrique* (55). Block of the lumbar plexus during early labor was followed by a caudal epidural **injection** for the expulsion phase. A soft elastic (silk) catheter was introduced through a needle inserted at the left flank and left in place after removing the needle: this was catheter epidural analgesia with a single dose of anesthetic continuously injected through an urethral type catheter *à demeure*. Repeatedly, i.e. "continuously", 0.5% percaine was administered. Previously Aburel had described the "double sensory innervation" of the uterus, consisting of autonomous sympathetic fibers (T11-L2) and cerebrospinal fibers (S2-S4). The lumbar aortic plexus was targeted too. (56) A sacral epidural administration of the anesthetic - percaine (dibucaine) with adrenaline- in the first stage of labor was performed; for additional medication a

needle catheter placed into the caudal canal during the second stage of labor or into the lumbar aortic plexus during the first was required. The continuous caudal block assured neuraxial labor analgesia. Neuraxial techniques were thus revitalised in obstetrics. Aburel's method and priority were mentioned or described in numerous papers, including Clifford B. Lull and Robert A. Hingson's book on the "Control of Pain in Childbirth" (1945) and many other reviews of the topic. (57, 58, 59, 60, 61)

1938. Society of Physicians and Naturalists in Iasi

Until present Eugen Aburel is credited with the first in the world method enabling childbirth without pain. He first presented his original technique in Paris in 1931.(55,56) But he equally informed the people in Iasi about his method for "suppression of labor pains" in a conference given at the Society of Physicians and Naturalists of Iasi, in 1938, an event mentioned in the local newspaper "Opinia". Professor Eugen Bogdan Aburel worked in Iasi at that moment and spoke about his method for "suppression of labor pains" in a conference given at the Society of Physicians and Naturalists in Iasi, in 1938, a widely recorded event in the local "Opinia" newspaper. The scientific session was chaired by Professor Leon Ballif, a famed neuropsychiatrist, and also included scientific presentations by Prof. Dr. Ion Tanasescu, Dr. Teodor Cadere, Dr. Oscar Franke and Dr. H. Vascoboinic. Prof. Dr. Eugen Aburel made a scientific communication regarding "Epidural analgesia in the field of labor", in which he explained his original procedure of epidural analgesia for suppressing delivery pains through an anesthetic injection practised in the epidural space of the spine. This procedure should not be confused – Aburel outlined – with spinal anesthesia (rachianesthesia), used in usual surgical interventions. The anesthetic injection is given before childbirth and is able to remove any pain for 5-7 hours. Prof. Dr. Aburel's procedure is not risky. Postnatally women preserve their bodies' sensitivity and can move while newborn babies are perfectly healthy. Prof. Aburel presented 24 cases in which the

procedure was applied successfully. On several diagrams he illustrated normal labor contractions under analgesia. Attempts were also made to temporarily relieve pain in childbirth by Professor Dogliotti (Torino)¹. However Prof. Aburel outlined the advantage of his procedure which by simply injecting a small amount of anesthetic blocked all the sensitive pathways of the uterus, allowing the woman not to fall asleep as it happens in other procedures. "Opinia" concluded its news by adding that Prof. Dr. Aburel performed these experiments in collaboration with Dr. Lupu. At the end of the meeting, Prof. Dr. Ballif emphasised the importance of Prof. Aburel's communication, which was going to cause "great interest in the medical world". And in fact, it did.

2. Aburel's "instillation abortion". [It provokes](#) termination of pregnancy including therapeutic abortion. Another concern of the Professor was the study of the neuromuscular excitability of the pregnant uterus. From these researches an original procedure resulted - [i.e., a means of](#) inducing birth through intra-amniotic injections of excitomotor substances. Rapidly spread to many countries, Aburel's technique of intra-amniotic injection of hypersaline solution was first presented in a communication at the **Society of Physicians and Naturalists in Iasi** in 1934 (62). It was then published in that **Society's Journal** in 1939. (63) The procedure was intended to trigger uterine contraction and expulsion of the product of conception, a dead fetus. By this method a miniature birth was produced. The operation consisted of instillation of hypertonic saline solution for induction of abortion. In the second trimester of pregnancy, 100-200 ml of a hypertonic saline (sodium chloride) - 20-33% solution -, having an osmotic pressure higher than that of plasma, was injected transabdominally into the amniotic sac, after a quantity of 100-200 ml of amniotic fluid had been extracted by amniotic puncture from the amniotic cavity. Labor induction could be also achieved by practising intersegmento-ovular tocogenic perfusions with saline or e.g.

¹ Professor Achille Mario Dogliotti - technique of the "hanging drop" for epidural anesthesia (1933).

oxytocin.(64) Prostaglandin, hypertonic saline or oxytocin for second-trimester abortion are efficient. Abortion occurs within 24-72 hours. Nonetheless complications are not lacking either. Aburel method of induced abortion aims at stimulating uterine contractions and dilating the cervix. Apart from producing abortion on demand, the method is useful whenever a therapeutic abortion is needed, in case of gross fetal abnormalities incompatible with life or dead fetuses. Due to his thorough studies on the neuromuscular excitability of the pregnant uterus, Aburel could elaborate this original procedure of evaluating myometer excitability dynamics in the pregnant uterus: different dilutions of the hypothalamic hormone oxytocin – extracted from the hypophysis – were injected and the minimal pharmacologically active dose was determined.

At the same time he had previously studied and highlighted in the placenta the natural exciting principle of uterine contractions with the main role in triggering birth. In fact, he proved that the placenta plays an inhibitory or oxytocic and tocogenic role. (39) Aburel technique was able indeed to disrupt the course of pregnancy.

3. Aburel's radical trachelectomy for early-stage cervical cancer. In the 1950s Professor Aburel set up this fertility-sparing technique, a pioneering conservative approach in gynecological oncology. According to him, for fertile women suffering from cervical cancer in early stages, surgery should be extensive, but preserve the uterus fundus and the ovaries so that the patients could still carry pregnancies and maintain a rather good emotional condition. He was already an experienced surgeon and practiced different types of cervical incisions since the beginning of his career. (65) Subcorporeal hysterectomy in early cervical pregnancy preserves indeed utero-ovarian functions and illustrates a conservative and physiological procedure, opposed to the radical surgical technique used before. In 1957, Eugen Aburel was the first to describe this “extended subfundic colpohysterectomy” in an original paper published in France, and later in Germany. (66,67)It was presented in Montreal in 1958, too. Aburel procedure, almost forgotten because

at that time radical surgery was the rule, was revitalized by Professor Daniel Dargent (1937-2005) and coworkers in 1994. (68,69,70) Interestingly Professor Dargent's father not only knew Aburel but they were good friends, too. (71) The vaginal approach in radical trachelectomy with pelvic lymph node assessment became the standard care for selected women in an early-stage of cervical cancer (<2 cm), who desire to maintain their fertility. Special circumstances occur in pediatric oncology, when in young girls with cervicovaginal tumors laparotomy is required and preservation of reproduction capacity and psychological balance are important. (72) Aburel's priority should be better pointed out even though it is already mentioned in the national and international medical literature. (73,74,75)

**4.Aburel's pyramidalopexy or colp-
itshmo-pyramidalopexy.** This uteropexy, specifically pyramidalopexy, procedure illustrates a reconstructive technique, he generally recommended in case of simple retroversoflexed uterus with first or second degree prolapse. After 1958 plastic and reconstructive surgery started to develop in Romania and Professor Aburel was among the supporters of this new specialty and its main representative, Professor Agrippa Ionescu.

The procedure of pyramidalopexy involves a Pfannenstiel incision with the preparation of the muscular-aponeurotic flap and its fixation with a first thread at the top of the flap and the caudal portion of the vagina, a second thread to the vagina, folding it and at 1 cm from the pyramidal flap. The third thread will include the round ligament, the bladder peritoneum paramedian right, the superior side of the pyramid flap near the base, the bladder peritoneum paramedian left, the corresponding round ligament and the anterior uterine surface at 1 cm above the flexion fold. During the entire procedure the uterus remains in its place. The last operating step is represented by restoration of the abdominal wall by consolidating the base of the pyramidal flap and completing its peritonisation.

Nowadays this procedure is still valid and inspires specialists to create and implement variants of the original procedure adapted to particular situations. (76)

Aburel had equally set up another reconstructive method achieving anterior colporrhaphy using pediculated vaginal strips. (77)

5. **Aburel's sagittal myometrectomy.**

Among the most important and appreciated procedures imagined and applied by Prof. Aburel sagittal myometrectomy in uterine fibromatosis constitutes an original contribution that preserves all genital functions including procreation. Vaginal myometrectomy illustrates another example of conservative gynecological surgery of the uterus, and is therefore of particular interest. (78,79) Myometrectomy is intended to extirpate large or multiple fibroid nodules en bloc with more or less extensive portions of the uterine wall. Sometimes Aburel's name is linked to that of another surgeon, C.R. Cirio: *Cirio-Aburel myometrectomy*. (80, 81,82)

In order to stop excess uterine bleeding, he imagined and applied an improved obstetrical balloon since he was very young (1930). (83) Another contribution is the Pfannenstiel-Aburel suprabubic transverse abdominal laparotomy. (81,82)

IV. Cancer control in Romania and abroad

An Anticancer Institute. Fight against cancer developed in Romania quite early in the first decades of the XXth century when, due to better diagnostic capacities and to disease frequency, this illness began to represent a social problem. Indeed, in the 30's, brilliant Professor Victor Babes, as well as his nephew, the famous Dr. Aurel Babes, collaborator of Professor Constantin Daniel, one of the Romanian Obstetrics and Gynecology school founders, were directly involved in it. In 1930 distinguished medical specialists achieved a documentary film equally produced in order to

educate people about this life-threatening condition. In 1939, in Iasi, within "St. Spiridon" Hospital Administration (Epitropy), an Anticancer Institute was created at the "St. Spiridon" Central Hospital. Professor Emil Radu, a very skilled radiologist, was in charge of organizing it, supported by the "St. Spiridon" managers (*epitropi*), Professors Gr. T. Popa, dean of the Faculty of Medicine, and Ion Balteanu, director of the Institute of Hygiene in Iasi. (22) The idea was firmly encouraged by many other specialists. On this occasion, Professor Eugen Aburel, as head of the Gynecology and Obstetrics Chair at the Faculty of medicine and director of the "Grigore Ghica-Vodă" Maternity Hospital in Iași, Prof. Aburel gave an interview to the "Opinia" newspaper, the most popular local periodical, emphasising what the title of the article clearly expressed "The danger of cancer. Causes - prevention and fight against cancer. An important proposal regarding the Anticancer Institute". The Anticancer Institute collaborated tightly with the Institute of Radiology and the Dispensary for Cancer Patients.

"It had to ensure prevention and therapy by offering consultations, operations and medication for free." "The initiative to create an anti-cancer center in Iasi must be encouraged – Aburel said. In fact, according to the official statistical data which, of course, are not complete (the health campaign discovered a 10% increase), cancer mortality in our country is 43-45 per 101,000 inhabitants annually.² Women – Aburel continued – pay the biggest toll of this scourge, as uterine and breast cancer are the most common. Professor Fabre very exaggeratedly claimed that 75% of cancers belong to women, in which it mainly affects the uterus and then the breast. Why this high percentage of cancers in women? First of all, prolonged local irritations, caused by secretions, inflammations, ulcerations, and injuries following difficult childbirths are a predisposing factor. It follows that special attention is needed for the treatment of these common injuries that can favor the appearance of cancer". ("Opinia",

² Statistics relate to 1939.

no. 9688 / July 13, 1939).

Undoubtedly the evolution of the Clinic of Oncology of the Central Hospital in Iasi towards the foundation of a modern Regional Institute of Oncology (IRO) – inaugurated in 2012 – represents the true fulfilment of that project because, unfortunately, oncological diseases keep on being on the rise.

On an international level, Professor Aburel participated in the fight against uterine cancer being member of the International union for cancer control since 1965.

Aburel, an active member of the Society of Physicians and Naturalists in Iasi (SPN)

As a prominent representative of the academic world in Iasi, Dr. Aburel was a member deeply involved in the SPN activity since he was very young. SPN were the first scientific association to be created in Romania in 1830, and its periodical was first printed in 1887 and are still vivid today. Dr. Aburel's first and main studies were communicated there and published in the *SPN Medical-Surgical Journal*: [Contributions to the study of cholecyst hydropsis], 1925; [A case of ventrolateral hernia], 1926; [Appendicular abscess on the left], 1927; [Peripheral vasomotor pathways of the limbs], 1927; [Cervical incisions in obstetrics. A new indication], 1932; *Le déclenchement du travail par injections intra-amniotiques ou tocogènes*, 1939; *Recherches sur la fonction tocogène du placenta*, 1942; *Recherches sur la pathogénie et le traitement des bouffées de chaleur*, 1942.(23,35,45,46,49,60,63,65)

He met there all the academic staff of the Faculty of Medicine and the most burning issues and groundbreaking medical discoveries were debated there. The local press, such as "Opinia" newspaper, paid attention too the SPN activities and reported the most interesting events, able to motivate, give solutions or inspire common people, too.

Scientific meetings gathered great physicians, university role models, elite intellectuals, most of them trained not only in Romania but almost always well-known centers of the Western European world; Paris, Montpellier, Berlin, Vienna or Torino. Among Professor Aburel's colleagues in Iasi there were, e.g., Dr. Dumitru Pintilie, Prof.dr. Ion Enescu,

Prof. dr. Nicolae P. Balan, Prof. dr. Emil Radu, Prof. dr. Petre Vancea, Prof. dr. Ion Nicolau, Prof. dr. Gheorghe Tudoranu, Prof. dr. Leon Ballif, Prof. dr. Ion Tanasescu, Prof. dr. Vladimir Butureanu, Prof.dr. Gr.T.Popa, Prof.dr. Elena Puscariu, Dr. Constantin Zosin –future professor at the Faculty of Medicine of Timisoara, future Prof. dr. Iuliu Nițulescu, Dr. Zoe Caraman, Dr. Maria Briese, Dr. Constanța Parhon – Ștefănescu, a real pleiad of illustrious professionals who represented the creative period of medical practice and education in Iasi.

World War II and the communist regime. During the Second World War, Dr. Aburel took care of the population in Iasi, capital of Moldavia, a place he was forced to leave soon after the beginning of the War. In fact the Faculty of Medicine took refuge in Alba Iulia (Transilvania-Romania). The staff of the "St. Spiridon" Central Hospital was mobilized and physicians spread in different parts of Moldavia. Prof. Eugen Aburel arrived in Alba County where he directed the 3rd Surgical Department, comprising 50 beds. For his highly qualified endeavour in assisting the wounded and diseased people and for his constant and effort to save human lives he was rewarded with the "Queen Maria" Cross Order.(85)

Unfortunately before long Aburel, Placinteanu and, D.D.Popescu, all appreciated obstetricians and gynecologists and former colleagues in Prof. Zaharescu-Karaman's Clinic, left Iasi for Bucharest soon after the end of World War II.

Transfer to Bucharest. New opportunities and original ideas

Transferred to Bucharest in 1947, Aburel went on with his tremendous energy and creativity as a researcher, physiologist, surgeon, clinician, and bachelor's thesis supervisor for other 28 years. In 1952 he was appointed head of the Obstetrical and Gynecological Clinic at the "Philanthropy" Hospital and headed the chair of Obstetrics and Gynecology at the Institute of Medicine and Pharmacy of Bucharest. At the beginning of his stay in Bucharest he also worked in maternity services belonging to different other hospitals: Witting, Coltea, Polizu and Steaua.(4) From 1952 to 1969, he directed the Clinic of Obstetrics and Gynecology of the "Philanthropy" Hospital in Bucharest. Professor

Aburel retired in 1969, but he could continue his outstanding activity as a consulting professor emeritus, publishing papers and giving advice to less experienced doctors until the eve of his death that occurred due to a severe illness almost half a century ago, on December 16th, 1975.

Aburel formed a new team of collaborators and achieved impressive syntheses to be published in Romania and abroad: more editions of the Handbooks of Obstetrics and Gynecology he coordinated, scientific papers and a monograph on tuberculosis in women appeared in Paris at the celebrated Masson et Cie Publishing House, in 1971. He went on collaborating with Professor Parhon in the field of endocrinology, and with skilled biochemists in order to investigate hormones and metabolisms in women under various circumstances.

He further amplified his studies and research priorly performed in Iasi, obtaining new impressive results. Among them the radical trachelectomy procedure, he put in place in the 50's, is now regaining ground again, when "minimally invasive" approaches are preferred whenever possible. It was an interesting way of excise early cervix cancer lesions still preserving the possibility of future pregnancies, and, at the same time, reducing the psychologic impact of such "mutilating" operations. Sagittal myometrectomy hysteropexies and genital infections were other topics he thoroughly investigated, too. His outstanding personality was fully recognized.

Memberships and Rewards

Since he was a young doctor Eugen Aburel was member of important scientific associations: in Romania he was a prominent member of the Society of Physicians and Naturalists of Iasi. Later he became a member of the Romanian Academy of Medical Sciences. In France he was accepted as corresponding member of the French Society of Obstetrics and Gynecology (1929), member (1932) and honorary member (1940-1975) of the French Society of Gynecology. He contributed permanently to "La Revue Française de Gynécologie et Obstétrique".(10) For his merits he was appointed honorary president of the World

Congresses of Obstetrics and Gynecology in Montreal (1958) and Vienna (1965). On February 13, 1968, he was elected foreign corresponding member of the Académie Nationale de Médecine of France (1968-1975), division of surgery, childbirth and surgical specialties. He was also an honorary member of Turkish Society of Obstetrics and Gynecology, and the "Purkinje" Society of Medicine (Czechoslovakia). He was president of the Romanian Society of Obstetrics and Gynecology from 1951 to 1961, and was appointed professor emeritus in 1965. He was an active member of the Romanian Academy of Medical Sciences and of the Union for International Cancer Control, particularly fought against uterine cancer (1965-1975).

In 1973, Eugen Aburel was the first Romanian to receive the "Palme Académiques" Order on behalf of the French Government "in recognition of his years of work in the field of epidural anesthesia". (Fig.3) Nevertheless, Aburel was prevented from travelling to Paris on

both special occasions in 1968 and 1973, so he had to receive the French distinctions in Bucharest. (84) He was the first Romanian to receive this high distinction.

Conclusions

Professor
dr.Eugen



Bogdan Aburel redimensioned the obstetrical and gynecological schools both in Iasi and Bucharest and, through his students, in the whole country. He had several defining original contributions such as painless deliveries, instillation abortion, trachelectomy, pyramidalopexy, sagittal myometrectomy, oncologic gynecology.

For his obvious merits Professor Aburel is considered the father of modern Obstetrics and Gynecology in Romania and an important con-

tributor to this medical specialty on an international level. He undoubtedly enabled Obstetrics and Gynecology to move forward, due to his intensive work and clinical skills, his innovative surgery and experimental approaches, due to the impetus given to conservative, physiological and reconstructive surgery. Concurrently he focused on women affective life and identified solutions to alleviate sufferings and pain occurring in pregnancy and in various diseases. For almost half a century he "gave birth" to new generations of renowned specialists in Obstetrics and Gynecology, including well trained midwives. Iasi and Bucharest were fortunate Romanian medical centers having such a great open spirit and inspirational mind.

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